California Advanced Reciprocating Internal Combustion Engines Collaborative

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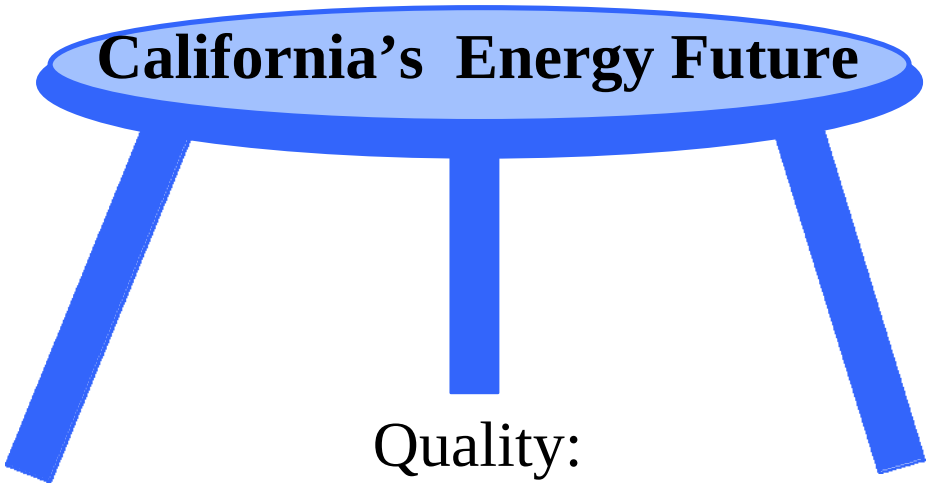
California has Established a $62M/yr Public Interest Energy Research Program (PIER)



Economy: Affordable Solutions

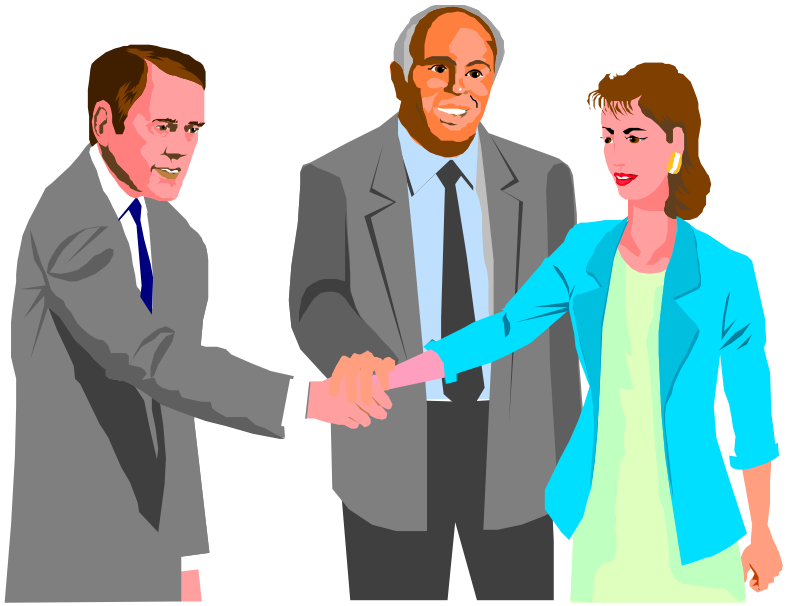
Quality: Reliable and Available

Environment: Protect and Enhance

Vision Statement

The future electrical system of California will provide a clean, abundant and affordable supply tailored to the needs of “smart”, efficient customers and will be the best in the nation.

Tailored, clean, abundant, affordable supply



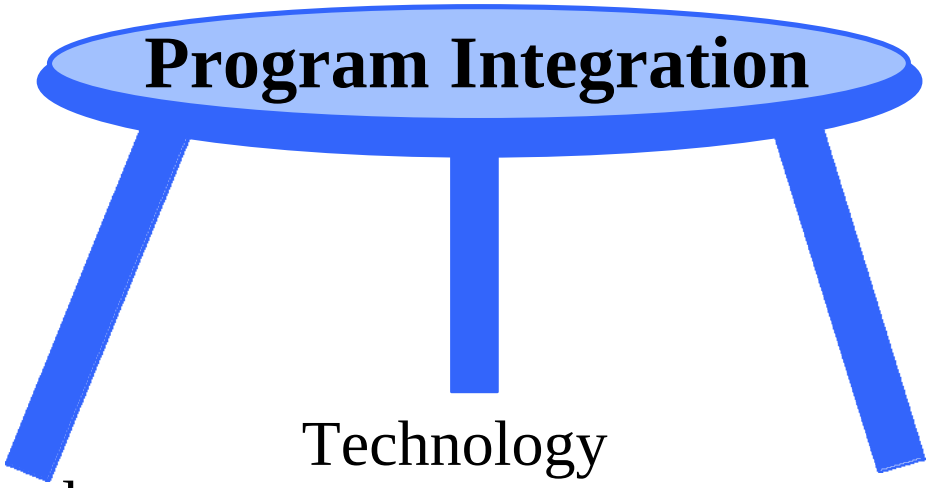
Smart, efficient customers

Funded Program Areas

(in millions through March 2001)

Supply **Renewables, EPAG**	**$74**
Demand **Buildings, Ind/Ag/Water**	**$48**
Strategic, Environmental	**$47**

Attributes for Addressing State Issues



Balanced Technology Portfolio
- -Temporal
- -Technology
- -Risk

Technology Partnerships
- - Universities
- - Industry
- - Federal

Focus on California
- - Specific to State needs

Technology Partnerships are Critical for Overall Success of the Program

- Collaborative Funding
  - USDOE
  - EPRI
  - Industry
- Collaborative Management
  - UC Institutions
  - EPRI
- Other Partnerships
  - Other CEC initiatives, Cal/EPA, USEA, other federal agencies
  - ASERTTI, other states, national labs

Reciprocating Internal Combustion Engines

- Mature technology used for standby emergency power
- 3000 MW capacity for 300^{+} kW systems
- Major problem: Poor atmospheric emissions

Goal: Can we develop substantively cleaner systems to add to our portfolio of modular energy technologies